

# **Hydrellia triticia Coquillett (Diptera: Ephydriidae), New to Hawaii**

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## ABSTRACT

The occurrence in Hawaii of *Hydrellia tritici* Coquillett, a potential pest in grasses, is reported. The species is briefly described and its damage elsewhere is discussed. A lectotype is designated for the species.

## INTRODUCTION

Through the kindness of Dr. D. Elmo Hardy and the collecting efforts of Mr. S. L. Montgomery, we were recently sent several specimens of a *Hydrellia* species for identification. The species is apparently new to Hawaii, and because it represents a potential pest species, we are reporting it in some detail to facilitate its identification and further study. We have cited pertinent literature, especially that which refers to its immature stages and to reports of its damage. In addition, we are taking this opportunity to make a lectotype designation for the species.

We express our gratefulness to Dr. Hardy for making these specimens available for study and to Dr. D. L. Deonier for reviewing the manuscript.

## **Hydrellia tritici Coquillett**

*Hydrellia tritici* Coquillett, 1903:324 [Australian wheat plant].—Malloch, 1925:327 [redescription, Australian locality data].—Tonnoir and Malloch, 1926:14 [redescription, first record from New Zealand].—Cresson, 1932:15 [diagnosis, apparently a member of the *albilabris* Meigen species-group]; 1948:4 [synonymical bibliography].—Harrison, 1959:225-226 [redescription, New Zealand locality data, figures of head and male terminalia, collected from grasses, compost heap, "on potatoes," attracted to lights].—May, 1960:1-3 [leaf miner in pasture grass, figures of larva and puparium, diagnosis of adult and immatures]; 1963:48 [leaf miner in Mercury Bay weed from Nelson, N. Z.].

**Diagnosis.**—Separable from other Hawaiian species of *Hydrellia* by the following combination of characters: Length 1.68-2.34 mm; frontal lunule distinctly shiny, with brilliant metallic luster, blackish; mesofrons and fronto-orbits concolorous and with similar vestiture, sparsely tomentose, subshiny; parafrons densely tomentose, appearing velvety; face shiny but with tomentose vestiture, gray to blackish gray dorsally, becoming silvery gray to whitish ventrally; 4 lateral facial setae, dorsal 2 pairs longest; postgena and lateral occiput blackish, tomentose, appearing velvety; maxillary palpi black. Mesonotum and notopleuron mostly subshiny, very sparsely tomentose, blackish brown; supra-alar region densely tomentose, appearing velvety; pleural areas concolorous with mesonotum but with denser tomentose vestiture, appearing grayish to whitish gray, especially

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posteroventrally. Chaetotaxy of mesonotum as follows: Acrostichal setae inconspicuous, sparse, in 2 rows, rows approximate; only anterior dorso-central bristle present, presutural; presutural, intra-alar, postalar, and prescutellar bristles well developed; scutellum with 2 lateral bristles. Legs with coxae, middle and hind femora, and to an extent middle and hind tibiae orange to yellowish orange; middle and hind tibiae darker basally, with some whitish tomentosity; front femur with basal half concolorous with other femora, apical half and remainder of front leg blackish; tarsi of middle and hind legs with apical 3 tarsomeres blackish, otherwise concolorous with rest of leg. Wing uniformly lightly infumated, grayish brownish. Halter with pedicel orange, capitellum lemon yellow. Abdomen uniformly blackish, first 3-4 terga sparsely tomentose, becoming sparser to bare apically, fifth tergum bare, with shiny metallic luster.

**Type Material.**—Lectotype female, here designated, is labeled: "Bred from wheat [handwritten]/Perth W. Austr[alia]/From Dept Ag. W. Austrl [handwritten]/Type No. 7003 U.S.N.M. [red]/Hydrellia tritici Coq. [handwritten, black subborder]." The lectotype is in good condition, is double mounted (glued to a paper point), and is in the National Museum of Natural History, Smithsonian Institution, USNM type number 7003., Paralectotypes are as follows: Australia. New South Wales: Mittagong, Dept of Mines & Agriculture, W. W. Froggatt (3♀; USNM). In the original description, Coquillett (1903) did not designate a holotype, but mentioned 4 syntype specimens, all of which are in the USNM and are females. From these specimens, we have selected the best preserved, the female from Perth, as the lectotype.

**Remarks.**—Cresson (1932) noted that *Hydrellia tritici* was apparently related to *H. albilabris* Meigen, a European species. Although allied to *H. albilabris*, we suggest that *H. tritici* is even more closely related to two North American species: *H. formosa* Loew and *H. notata* Deonier. These two species, plus *H. tritici*, are characterized and distinguished as follows: Supra-alar area densely tomentose, appearing velvety; lacking well developed postsutural dorsocentral bristles; part or all of frons densely tomentose, appearing velvety (similar to supra-alar area); facial vestiture mostly grayish to silvery white, sometimes faintly yellowish.

*Hydrellia tritici* was originally described from specimens collected in Australia, where the species is widespread (Wirth, unpublished records). Tonnoir and Malloch (1926) later found this species in New Zealand, probably an introduction, and its occurrence there was subsequently documented by Harrison (1959) and May (1960, 1963).

The occurrence of *H. tritici* in Hawaii is apparently also due to an introduction. The material submitted to us by Dr. Hardy consisted of two collections by S. L. Montgomery on the island of Hawaii: 1 male and 3 females collected on 9 Sept. 1979 at Bird Park, Kilauea, elev. 3950 ft, and 2 males taken on 25 Aug. 1969 on the Mauna Loa trail at 13,000 ft elev. To us it is scarcely conceivable that the first collections of this species in Hawaii would be taken near the summit of the second highest peak in the islands where conditions for its breeding are most unfavorable, unless its populations at lower elevations on the island were already large enough that numerous individuals were being carried to the mountain top on the wind or air currents.

This species represents a potential pest mostly for grasses. The lectotype was "bred from wheat," and May's records from New Zealand are from pasture grasses (*Poa annua* L., *P. trivialis* L., and *Lolium* sp.). Harrison (1959) recorded its occurrence with "grasses," but also with compost heaps and on potatoes. The latter records are probably food sources for adults, as the larvae are only known to be leaf miners. The only exception to graminaceous hosts is May's record of leaf mining in Mercury Bay weed (*Dichondra repens* Forst.), a species of the family Convolvulaceae.

Various species of the genus *Hydrellia* have caused considerable damage to cereal crops. Lange, et al. (1953), for example, estimated that *H. griseola* (Fallen), the rice leaf miner, destroyed between 10-20% of the Californian rice crop in 1953, with a probable loss of \$16 million. This same species has been reported from over 40 other graminaceous host plants, sometimes causing damage (Deonier, 1971). Grigarick (1959) has studied the life history of this species in detail and has given possible causes for rice susceptibility.

Other species of *Hydrellia* with pest status include *H. philippina* Ferino ("rice leaf whorl maggot"), found to infest irrigated rice seedlings in the Philippines (Ferino, 1968) and *H. prosternalis* Deeming a pest of rice seedlings in Nigeria (Deeming, 1977).

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